CLAIMS

1. A method for enhancing wide dynamic range in images, the method comprising:

acquiring at least two images of a scene to be imaged, the images acquired using different exposure times;

constructing for a first image of said at least two images an illumination mask comprising a set of weight values distinctively identifying respective areas of pixels of high or low illumination, over-exposed or underexposed with respect to a predetermined threshold illumination value, assigning one of the weight values to each pixels, whereas other weight value is assigned to other pixels of the other of said at least two images;

using a low-pass filter to smooth border zones between pixels of one weight value and pixels of other weight value, thus assigning pixels in the border zones new weight values in a range between the weight values

constructing a combined image using image data of pixels assigned with one weight value of the first image and image data of pixels assigned with other weight value of the other of said at least two images and in pixels corresponding to the border zones using image data from said at least two images proportional to the new weight values.

2. The method of claim 1, wherein the weight values are binary values.

3. The method of claim 1, wherein the acquired images are in JPEG format, the JPEG format including a DCT transform domain.

4. The method of claim 3, wherein the step of constructing the combined image is carried out in the DCT transform domain.

5. The method of claim 4, wherein the following relation is used in the constructing the combined image:

$$I_{p,q}^{DCT_{WDR}} = \alpha(I_{DC}^{Long}) * I_{p,q}^{DCT_{Long}} + (1-\alpha(I_{DC}^{Long})) * I_{p,q}^{DCT_{Short}} \cdot Ratio \quad ,$$

where I_{DC}^{Long} is the DC coefficient of the DCT transform of the relatively longer exposure image, α is a weight representing the illumination mask and Ratio is a measure that defines the relation between the images of different exposure exposures, and p, q are DCT coefficients and * represents convolution.

6. The method of claim 5, wherein only first few DCT coefficients are used in calculating the relation.

7. The method of claim 6, wherein $p=1$ *and* $q=1$.

8. The method of claim 1, for color imaging, wherein the steps of claim 1 are carried our separately for each color plane.

9. The method of claim 1, further comprising:

detecting pixels in said at least two images indicative of motion by comparing corresponding image data from said at least two images;

evaluating image data value for pixels identified as indicative of motion using image data from one of said at least two images and using the image data value in constructing the combined image.

10. The method of claim 9, wherein the step of detecting pixels indicative of motion comprises looking for pixels for which the ratio $I^{Long} / \hat{I}^{Long}$ is beyond a predetermined threshold, I^{Long} is image data from one of said at least two images which was acquired with longest exposure time, and

$$\hat{I}^{Long} = \begin{cases} I^{Short} \cdot Ratio & where \quad I^{Short} \cdot Ratio < 255 \\ 255 & else \end{cases}$$

, where Ratio is a measure that defines the relation between the images of different exposure.

11. The method of claim 9, wherein the step of constructing a combined image includes using for pixels identified as indicative of motion only image data from one of said at least two images.

12. The method of claim 11, wherein the image data from one of said at least two images is reconstructed to simulate corresponding pixels in the other of said at least two images.

13. The method of claim 12, wherein using image data from one of said at least two images which was acquired with longest exposure time incorporated in two illumination masks.